METEOR SCATTER PROPAGATION



Meteor Showers Cometary Debris

January 3-4 April 21-22 May 5-6 June 14-16 July 28-29 July 29-30 August 12-13 October 8-9 **21-22**

November 17-18

December 13-14

Quadrantids Lyrids **Eta Aquarids** Lyrids **Delta Aquarids** Capricornids Perseids Draconids Orionids

Leonids

Geminids



Constellation Name = Radiant

August 12-13 peak in the mid-afternoon

 60 meteors per hour, fairly consistent from year to year.

Parent Comet: <u>109P/Swift-Tuttle</u>

Meteor Composition

Interplanetary and comet debris

- Specks of dust/rock/metal
- Enter atmosphere ~10-75 mi/sec
 - □ 36,000 mph 270,000 mph
- E-Layer
 - Burn up 50-75 miles altitude

 Leave behind short-lived ionized gas trails

Mechanics

Trail of ionized gas Refraction – radio waves bent down off of it Skip Distances ■ 300 – 1200 mi • Optimum 600 mi

Mechanics



Best conditions in the morning

Why the Morning? Earth's spin!



Duration

Function of frequency Lower is better, but most work is 6M and 2M

10M ~ 1 minute
6M ~ 15 seconds
2M ~ 1-2 seconds

Operating Modes

- < 200 LPM analog CW/SSB late 1990's</p>
 - ~30 sec. duration

Mostly digital since ~Y2K

- 15 sec. duration
- FSK441 (K1JT, Joe Taylor)
 - 4-tone FSK optimized for weak, short burst transmissions

■ 6M shown to be best performer using FSK441

Power / Antenna

~100W Transceiver
 PC/Laptop w/soundcard

 Analog/digital software

 Medium length Yagi

 Long, multi-element Yagis not best
 Too directive

Pre-arranged QSO Protocol

- Western station transmits first, Eastern second
- 1 You send their call, then your call
- 2 They confirm your call, their call
- 3 You send your report
- □ 4 They send their report
- 5 Both confirm reports
- 6 Both transmit "Roger" (RRRRR)
- □ 7 Sign off (R73 R73)

73 ES GN DE JIM K6FWT



Meteor by Leonard Wikberg III

www.sciencedata.net C2002